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Truck Crop Production Practices

COLUMBIA COUNTY, WISCONSIN

Labor, Power
and Materials
by Operation

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HOW TO USE THE DATA

Different kinds of data are needed for different purposes. Some persons have need for data on average labor, power, and material inputs while others, particularly county agents and farm budgeters, prefer data for usual or typical labor, power, and material inputs. The data in this report are presented in such a way as to satisfy both these needs.

Tables 1 and 2 contain information on the characteristics of farms in the sample. The remaining tables are for specific crops. There are four tables and a chart for each crop. These four sets of tables are not numbered in the usual way but are designated by the letters A, B, C, and D.

The tables lettered A present quantities and costs of materials used and of contract work hired per acre. Cost items included are direct costs only; they do not include charges for such items as land, overhead labor, and capital. Data that present only direct costs are somewhat limited in use. They are applicable in computing costs incurred in connection with crop insurance programs and are useful in partial farm budgeting to compare costs of producing alternative crops when charges for overhead labor, machinery, land, and so on, are the same for either crop and hence need not be taken into account.

These data are not appropriate and would be misleading for use as the sole criteria in judging whether or not a farmer made a profit on a crop or whether he should stay in business, or in making cost comparisons with crops grown in other areas. For these purposes, total costs are required.

Tables designated B present the various operations performed on the crops, the most common size of equipment used, the average number of times the operation was performed, the acreage covered, the man and power inputs per acre, and the total labor and power used per acre. These data do not reflect an accurate picture of operations or inputs on any one farm; they are averages of all operations and inputs.

Tables designated C present usual or typical labor and power inputs by operation. The accompanying charts show the seasonality of the operation by periods.

Tables designated D present for each operation the composition of the work force by major sources of workers.

Data in these tables were obtained from a sample of growers and are subject to sampling error. For some crops, particularly those having limited numbers of observations, large sampling errors are possible. Therefore, these data should be considered as approximations.

Tables A, B, and D are offered for those persons interested in average requirements. However, extension economists, county agents, farm budgeters, and others may have more use for the data on usual or typical situations shown in table C for each crop.

Farm labor placement officials and others concerned with the problem of obtaining and placing workers may find tables B and D and the charts of value in determining the number of workers necessary for each operation, and the period of time during which local seasonal workers and those from other areas will be needed to supplement the regular farm labor force.

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TRUCK CROP PRODUCTION PRACTICES
COLUMBIA COUNTY, WISCONSIN

Labor, Power, and Materials by Operation

By

Earle E. Gavett
Agricultural Economist

INTRODUCTION

In 1959, the United States production of truck crops for fresh market and processing occupied nearly 3.5 million acres of cropland. These crops used less than 1 percent of the total cropland. The farm value of truck crops harvested for sale was almost $1.1 billion, or an average of $300 per acre harvested. 1/

Although the total acreage of truck crops is small, it is highly concentrated in areas with conditions favorable for production of these crops. The major areas are in California, Florida, Texas, the Eastern Seaboard from Georgia to Long Island, N. Y., the States bordering the Great Lakes, and the Pacific Northwest.

Truck crops in general are intensive users of labor. In addition, the labor requirements are highly seasonal – with several labor peaks, the highest occurring at harvesttime.

Most truck-crop operations other than land preparation are difficult to mechanize. Thinning and weeding are two preharvest operations still performed largely by hand labor. Harvesting of a majority of truck crops is still predominantly a hand operation. In addition, most of these crops require repetitive pickings, which must be timely, as quality deteriorates very rapidly if the crops are not harvested at the optimum time.

These high labor demands, particularly during peak periods, such as those of weeding, thinning, and harvesting, have been difficult to meet. Most truck-crop areas do not have sufficient local labor available to handle the crops during these periods. This has led to many thousands of workers migrating from one area to another during the peak seasons to work on vegetables. In addition, many thousands of foreign workers are imported annually to help satisfy these heavy seasonal labor demands.

1/ Vegetables – Fresh Market 1958 Annual Summary – Acreage, Production and Value of Principal Commercial Crops, Vg. 2-2-(58); Vegetables – Processing 1958 Annual Summary – Acreage, Production, and Value of Principal Commercial Crops, Vg. 3-2-(58), U. S. Agr. Market. Serv. Crop Rpt. Bd.

Purchased inputs comprise a high proportion of the total inputs in the production of these crops. Most labor is hired. Fertilizer, seed, pesticides, and containers are significant items that are usually purchased. From 1953 to 1959, prices of these inputs increased relative to prices received for truck crops.

To gain further knowledge of some of the inputs involved in production of vegetables, information regarding the 1958-59 crop was obtained from 2,496 vegetable growers in 12 areas.

This is the first of a series of 12 publications containing information on labor requirements, production practices, and costs involved in the production of truck crops for fresh market and for processing. It presents information on production of sweet corn and green peas for processing, which was obtained from 90 producers in Columbia County, Wis. The area studied is shown on the map below.

A separate report covering all 12 areas will present information on the extent to which production of truck crops has become vertically integrated by either ownership or contractual agreements.

METHODOLOGY

Data were obtained by personal interview from 2,496 growers in 12 selected major producing areas of the United States. 2/ The areas sampled were the counties of (1) Erie, N. Y., (2) Accomack and Northampton, Va., (3) Colquitt, Ga., (4) Broward and Palm Beach, Fla., (5) Cameron and Hidalgo, Tex., (6) Berrien and Van Buren, Mich., (7) Columbia, Wis., (8) Yakima, Wash., (9) Marion, Oreg., (10) Imperial, Calif., (11) Monterey, Calif., and (12) San Joaquin, Calif.

The areas included in the survey were selected on the basis of importance of seasonal and overall production, diversity of crops grown – both for fresh market and for processing – and number and proportion of farmers harvesting truck crops for sale. 3/

The survey population was defined as all farmers producing truck crops for sale whose farm headquarters were located within the survey area, except that growers residing outside the county and more than 20 road miles from their headquarters in the survey area were excluded.

Within the survey area, a randomized area sampling plan was used to obtain the desired number of respondents.

CHARACTERISTICS OF COLUMBIA COUNTY, WIS.

In 1959, Wisconsin led the Nation in harvested acreage of vegetables for processing, and ranked second only to California in production and value of processed vegetables. Truck farmers in the State harvested 239,600 acres of vegetables for processing, valued at $22,900,000. 4/ Although Wisconsin is a leader in the United States in production of vegetables for processing, dairying is the leading enterprise in the State. In the 1954 census, 70 percent of the farms were classed as dairy farms, while less than 1 percent were classified as vegetable farms. Truck crops are commonly grown in rotation with hay and small grains. Consequently, the acreage of vegetables per farm is small.

Columbia County is one of the more important vegetable-producing counties in the State. The 1954 census reported that 854 farms, 32.7 percent of all farms in the county, harvested vegetables for sale. Comparable preliminary 1959 census figures are 747 farms and 32.4 percent. In both censuses, sweet corn and green peas were the major vegetable crops grown.

In 1960, information regarding the 1959 crop was obtained by personal interview with operators of 90 farms – a 12-percent sample – harvesting vegetables for sale. On the average, these farms had 155 acres of cropland. Vegetables were grown on 21 acres with vegetables for processing occupying 19 acres. In general, the farms in the area specialize in production of one truck crop. Table 1 presents the number of farms by acreage of cropland operated and further indicates the number producing one, two, or three truck crops. Of the farms in the sample, 70 percent produced only one truck crop. Green peas and sweet corn were the major truck crops grown on these farms (table 2). This report presents data on these two crops.

2/ The Crossley S-D Surveys, Inc., under U. S. Department of Agriculture, Agricultural Research Service contract #12-14-100-3826 (43) conducted the field survey and made preliminary tabulations. The author is responsible for analyzing the data.

3/ Based on data cited in footnote 1 and the 1954 Census of Agriculture, vols. I and II, U. S. Department of Commerce.

4/ See footnote 1.

Table 1.-Number of farms, average cropland and number of truck crops produced per farm, by acreage of cropland operated, Columbia County, Wis., 1959

Acreage of cropland operated (acres)	Farms in size group	Average acreage of cropland per farm	Distribution of farms by number of truck crops produced		
			1	2	3
	Number	Acres	Farms	Farms	Farms
Under 11.0	0	0	0	0	0
11.0 to 49.9	4	25.0	4	0	0
50.0 to 99.9	19	75.7	15	4	0
100.0 to 124.9	12	113.6	8	4	0
125.0 to 149.9	15	132.8	6	9	0
150.0 to 169.9	16	156.6	14	2	0
170.0 to 299.9	15	213.5	10	4	1
300.0 to 473.0	9	371.6	6	3	0
Total or average	90	154.9	63	26	1

Table 2.-The importance of truck crops by market use, 90 farms, Columbia County, Wis., 1959

Item	Sweet corn	Green peas	Other 1/
Number of farms on which crops were grown for -			
Fresh market	1	0	---
Processing	49	58	---
Acreage harvested, total	740	956	230
Fresh market	10	0	167
Processing	730	956	63
Average acreage harvested per farm, total	14.8	16.5	---
Fresh market	10.0	0	---
Processing	14.9	16.5	---

1/ Includes cabbage, dry onions, tomatoes, and strawberries for fresh market, and carrots, cucumbers, and dry onions for processing.

The data in tables A, B, C, D, and the accompanying chart are based on information covering the production of sweet corn for processing on 712.5 acres on 49 farms in 1959. The average yield per acre was 4.2 tons.

On these farms, tractors were the main source of power. They were used for operations listed unless otherwise indicated. Drawbar horsepower ratings were not obtained in this survey, but size of equipment used indicates that these tractors were 2- and 3-plow tractors with drawbar horsepower ratings of from 15 to 32.

Harvesting was done primarily with 2-row cornpickers and 2-ton trucks. More than 90 percent of the acreage was harvested by processors and local custom operators, thus relieving most farmers of the investment in harvesting equipment.

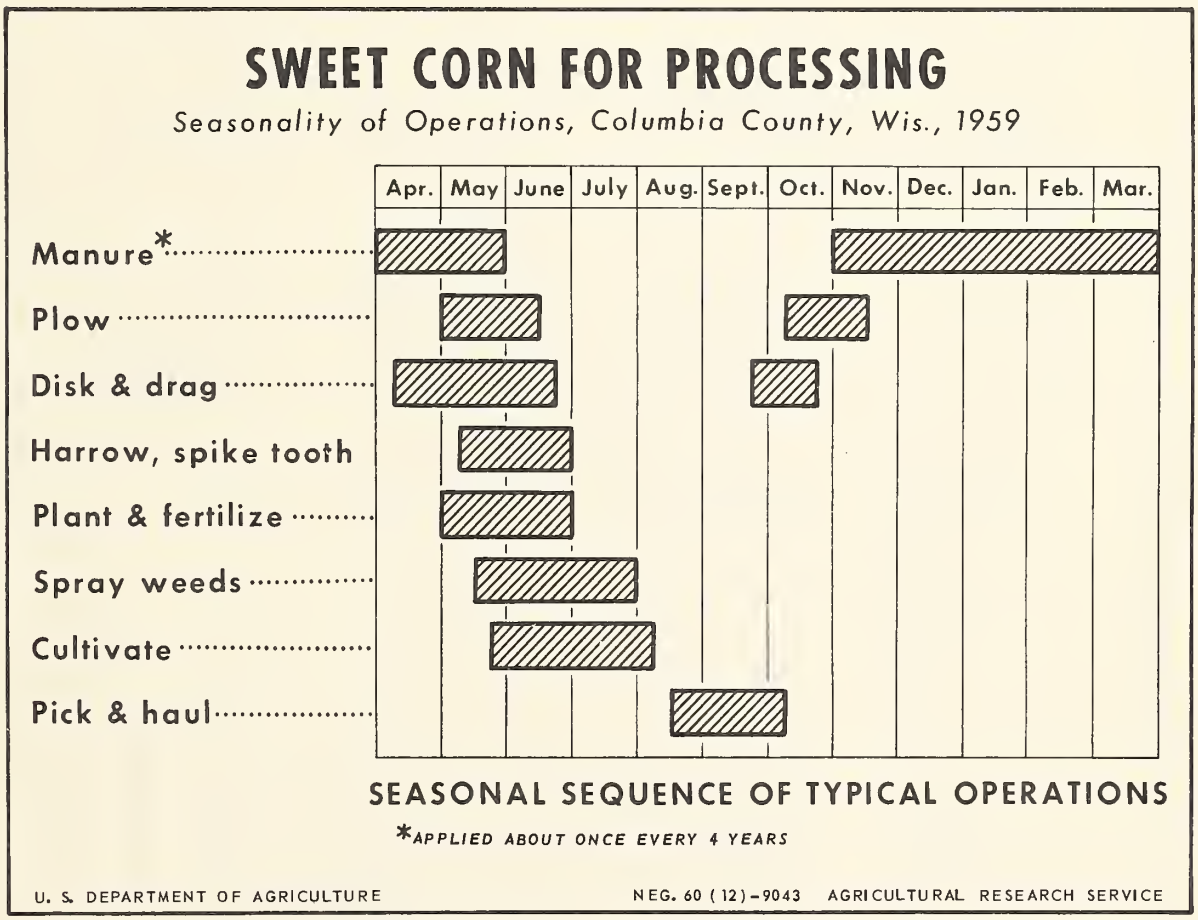

Table A. - Sweet corn for processing: Materials used and contract work hired, 49 farms, Columbia County, Wis., 1959

MATERIALS USED

Item	Unit	Units per acre	Price per unit	Cost per acre covered	Acreage covered	Average cost per acre
			Dollars	Dollars	Percent	Dollars
Manure	Ton	6.5	1.39	9.05	26.0	2.35
Fertilizer, 5-20-20	Cwt.	1.88	3.85	7.24	93.4	6.76
Seed, purchased	Lb.	9.2	.34	3.13	96.9	3.03
Seed, raised	Lb.	9.2	.34	3.13	3.1	.10
Weedkiller, 2-4-D	Qt.	.96	.94	.90	39.7	.36
Total, materials	---	---	---	---	---	12.60

CONTRACT WORK HIRED

Spray weedkiller	Acre	1.00	1.29	1.29	3.8	0.05
Pick by machine	do.	1.00	8.65	8.65	60.7	5.25
Haul by truck	do.	1.00	9.13	9.13	48.2	4.40
Pick by machine and haul by truck	do.	1.00	14.37	14.37	32.7	4.70
Pick by hand and haul by truck	do.	1.00	29.95	29.95	2.0	.60
Total, contract work	---	---	---	---	---	15.00

Table B. - Sweet corn for processing: Labor, power, and machinery used in producing and harvesting, by operation, 49 farms, Columbia County, Wis., 1959

Operation	Type and size of equipment	Times over	Time per acre, once over		Percentage of acreage covered	Average time per acre - all farms	
			Man	Power		Man	Power
		Number	Hours	Hours	Percent	Hours	Hours
Preharvest:							
Pick up stones	Hand	1.0	0.9	---	2	1/	---
Cut stalks	2-row chopper	1.0	1.5	1.5	4	0.1	0.1
Apply manure	85 bu. spreader	1.0	2.0	2.0	26	.5	.5
Plow	2 bot. 16 in. moldbd.	1.0	1.1	1.1	94	1.0	1.0
Disk and drag	9-foot tandem	1.4	.6	.6	93	.8	.8
Harrow	8-foot springtooth	1.7	.5	.5	13	.1	.1
Harrow	4-sec. or 20-foot spiketooth	1.7	.2	.2	100	.3	.3
Plant and fertilize	2-row planter	1.0	.6	.6	100	.6	.6
Cultivate	2-row cultivator	2.4	.6	.6	100	1.4	1.4
Fertilize, liquid	4-row sprayer	2.7	.4	.4	3	1/	1/
Cultivate and fertilize	2-row cult./attach.	1.0	.6	.6	1	1/	1/
Spray weeds	8-row sprayer	1.0	.2	.2	44	.1	.1
Total preharvest	---	---	---	---	---	5.0	5.0
Harvest:							
Pick by hand	Hand	1.0	8.1	---	2	.2	---
Load by hand and haul by truck	Truck	1.0	1.0	1.0	2	1/	1/
Pick by machine	2-row picker	1.0	1.8	1.8	98	1.8	1.8
Haul by truck	2-ton truck	1.0	2.7	2.3	98	2.6	2.3
Total harvest	---	---	---	---	---	4.6	4.1
Total	---	---	---	---	---	9.6	9.1

1/ Less than 0.05 hour.

Table C. - Sweet corn for processing: Usual labor and power inputs, Columbia County, Wis., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
		Hours	Hours	Hours	Hours
Apply manure	1/	2.0	2.0	0.5	0.5
Plow	1	1.1	1.1	1.1	1.1
Disk and drag	1	.6	.6	.6	.6
Spiketooth harrow	2	.2	.2	.4	.4
Plant and fertilize	1	.6	.6	.6	.6
Spray weeds	1	.2	.2	.2	.2
Cultivate	3	.6	.6	1.8	1.8
Pick, load, and haul	1	4.5	4.1	4.5	4.1
Total	---	---	---	9.7	9.3

1/ Applied once every 4 years.

Table D. - Sweet corn for processing: Composition of the work force, by operation, 49 farms, Columbia County, Wis., 1959

Operation	Distribution of workers				
	Operator and unpaid family	Year-round hired	Local seasonal	Nonlocal seasonal 1/	Not ascertained
	Percent	Percent	Percent	Percent	Percent
Apply manure	64	20	16	0	0
Plow	90	6	4	0	0
Disk and drag	87	9	4	0	0
Harrow, spiketooth	100	0	0	0	0
Plant and fertilize	94	2	4	0	0
Spray weedkiller	50	0	50	0	0
Cultivate	88	11	1	0	0
Hand harvest:					
Pick	10	0	0	90	0
Load, and haul by truck	10	0	0	90	0
Machine harvest:					
Pick	8	2	67	16	7
Haul by truck	15	0	82	3	0
Pick, and haul by truck	6	0	54	40	0

1/ Includes domestic migratory, foreign, and Puerto Rican workers.

Data presented in tables A, B, C, D, and the accompanying chart are based on information obtained covering production of green peas for processing on 956 acres on 58 farms in 1959. The average yield was 2,869 pounds of shelled peas per acre.

Tractors were the chief source of power on these farms. Unless otherwise indicated, they were used for operations listed. The size of tractor was not obtained, but considering the size of equipment used, it appears that the average tractor was about a 3-plow tractor with a drawbar horsepower rating of 22 to 32.

Most of the acreage of peas was harvested by equipment owned and crews hired by the processing plants. However, a few farmers mowed peas with their own machines, then had the crop loaded and hauled with the processor's equipment.

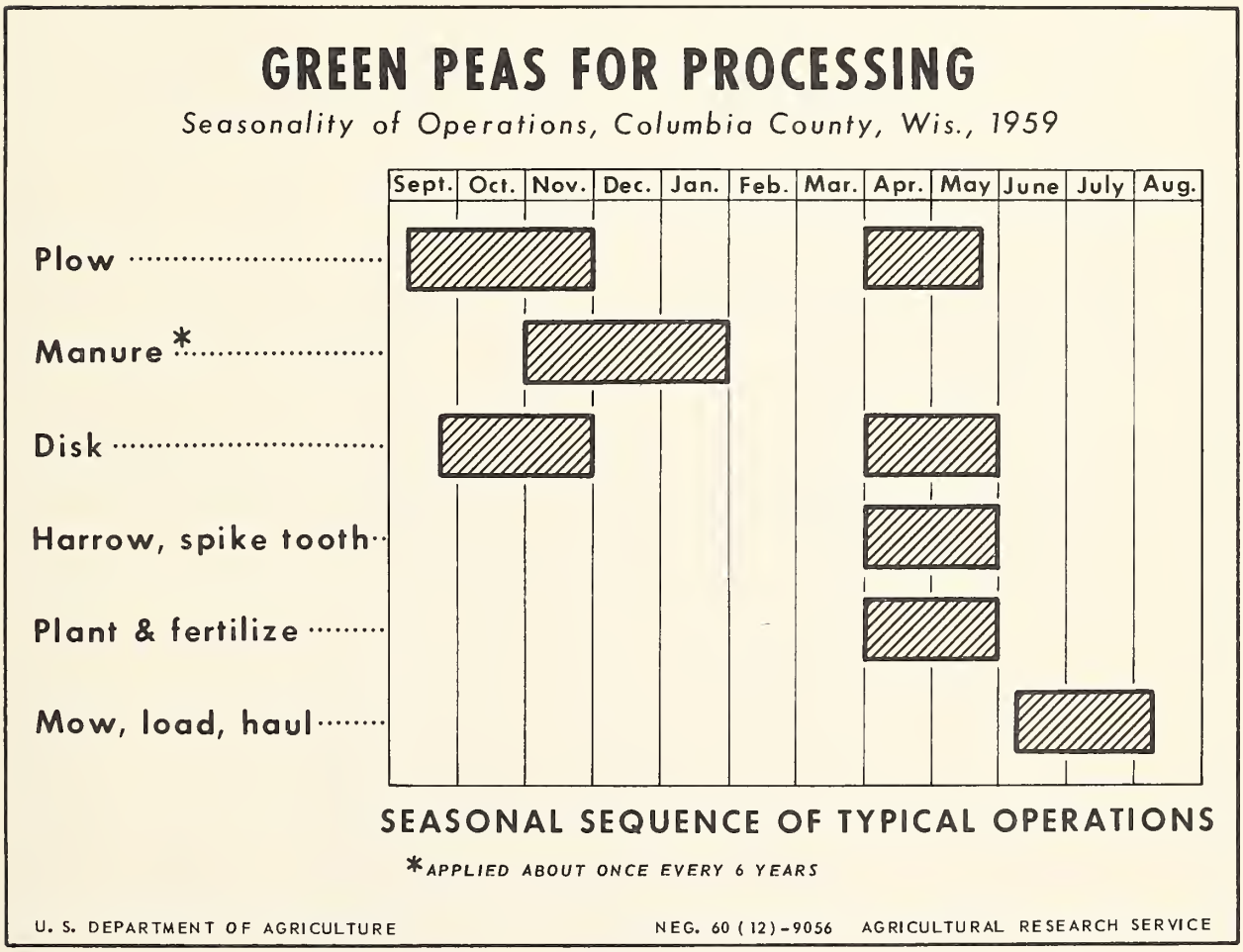

Table A. - Green peas for processing: Materials used and contract work hired, 58 farms, Columbia County, Wis., 1959

MATERIALS USED

Item	Unit	Units per acre	Price per unit	Cost per acre covered	Acreage covered	Average cost per acre
			Dollars	Dollars	Percent	Dollars
Lime	Ton	5.0	1.90	9.50	1/	0.01
Manure	Ton	3.0	2.67	8.00	17.0	1.36
Seed, purchased	Bu.	4.5	5.28	23.74	100.0	23.74
Inoculant	Can	1.3	.35	.45	20.8	.09
Fertilizer, 3-19-19	Cwt.	1.88	3.30	6.20	88.1	5.46
Weedkiller	Qt.	1.6	1.20	1.97	2.8	.06
Total, materials	---	---	---	---	---	30.72

CONTRACT WORK HIRED

Fertilizer, apply	Acre	1.0	5.00	5.00	2.6	0.13
Dust, plane and materials	do.	1.0	3.35	3.35	2.4	.08
Plant, drill only	do.	1.0	.78	.78	8.3	.06
Spray, plane and materials	do.	1.0	3.20	3.20	5.2	.17
Spray, sprayer and materials	do.	1.0	4.00	4.00	1.6	.06
Mow	do.	1.0	3.43	3.43	44.2	1.52
Load	do.	1.0	4.09	4.09	45.7	1.87
Haul	do.	1.0	5.51	5.51	43.7	2.41
Mow, load, and haul	do.	1.0	16.58	16.58	27.3	4.53
Load and haul	do.	1.0	12.58	12.58	19.2	2.42
Total, contract work	---	---	---	---	---	13.25

1/ Less than 0.05 percent.

Table B.- Green peas for processing: Labor, power, and machinery used in producing and harvesting, by operation, 58 farms, Columbia County, Wis., 1959

Operation	Type and size of equipment	Times over	Time per acre, once over		Percentage of acreage covered	Average time per acre - all farms	
			Man	Power		Man	Power
		Number	Hours	Hours	Percent	Hours	Hours
Plow	3-16 inch moldboard	1.0	1.1	1.1	97	1.1	1.1
Chop weeds	5-foot rotary mower	1.0	.6	.6	5	1/	1/
Manure	85-bushel spreader	1.0	1.4	1.4	17	.2	.2
Lime	Truck spreader	1.0	.8	.8	1/	1/	1/
Disk	8-foot tandem	1.7	.5	.5	88	.7	.7
Harrow	10-foot springtooth	1.2	.7	.7	29	.2	.2
Drag	10-foot drag	1.7	.3	.3	5	1/	1/
Harrow	20-foot spiketooth	1.8	.2	.2	83	.3	.3
Plant and fertilize	10-foot drill	1.0	.6	.6	100	.6	.6
Fertilize	Truck spreader	1.0	.3	.3	3	1/	1/
Spray, plane	Plane	1.0	1/	1/	5	1/	1/
Spray, ground	20-foot boom	1.0	.4	.4	3	1/	1/
Dust	Plane	1.0	1/	1/	2	1/	1/
Cut thistles	Hand	1.0	4.3	---	2	.1	1/
Total preharvest	---	---	---	---	---	3.2	3.1
Mow	6-foot mower	1.0	1.6	1.6	87	1.4	1.4
Load	6-foot pea loader	1.0	2.0	2.0	68	1.4	1.4
Haul	Trucks (2)	1.0	4.0	4.0	72	2.9	2.9
Mow and load	6-foot mower-loader	1.0	1.8	1.8	4	.1	.1
Load and haul	6-foot loader and trucks (2)	1.0	8.4	6.5	19	1.4	1.1
Mow, load, and haul	6-foot mower, loader, and trucks (2)	1.0	7.3	7.3	9	.7	.7
Total harvest	---	---	---	---	---	7.9	7.6
Total	---	---	---	---	---	11.1	10.7

1/ Less than 0.05.

Table C. - Green peas for processing: Usual labor and power inputs, Columbia County, Wis., 1959

Operation	Times over	Time per acre, once over		Time per acre, total	
		Man	Power	Man	Power
	Number	Hours	Hours	Hours	Hours
Plow	1	1.1	1.1	1.1	1.1
Apply manure	1/	1.4	1.4	.2	.2
Disk	2	.5	.5	1.0	1.0
Spiketooth harrow	2	.2	.2	.4	.4
Plant and fertilize	1	.6	.6	.6	.6
Mow, load, and haul	1	7.6	7.6	7.6	7.6
Total	---	---	---	10.9	10.9

1/ Applied once every 6 years.

Table D. - Green peas for processing: Composition of the work force by operations, 49 farms, Columbia County, Wis., 1959

Operation	Distribution of workers				
	Operator and unpaid family	Year-round hired	Local seasonal	Nonlocal seasonal 1/	Not ascertained
	Percent	Percent	Percent	Percent	Percent
Plow	92	8	0	0	0
Manure	78	22	0	0	0
Disk	87	13	0	0	0
Harrow, springtooth	100	0	0	0	0
Harrow, spiketooth	71	29	0	0	0
Plant and fertilize	93	3	4	0	0
Mow	25	3	68	3	1
Load	1	88	7	1	3
Haul	7	0	79	13	1
Mow, load, and haul	8	0	66	26	0
Mow and load	0	64	36	0	0

1/ Includes domestic migratory, foreign, and Puerto Rican workers.